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The good have a website. Evidence on website premia for firms from 18 European countries

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Abstract

This paper uses firm level data from the World Bank Enterprise surveys conducted in 2019 in 18 European countries to investigate the link between having a website and firm characteristics. We find that firms which are present in the web are larger, older, more productive, and more often exporters, product innovators, process innovators and (partly) foreign owned firms than firms without a website. The estimated website premia are statistically highly significant ceteris paribus after controlling for country and sector of economic activity. Furthermore, the size of these premia can be considered to be large. Good firms tend to have a website.

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1. Motivation

Presence on the web is today considered as an important part of a firm's strategy to successfully make a living. This tends to be even more important in times of the COVID-19 pandemic when quarantines and lockdowns increase the costs of face-to-face contacts with (potential) buyers and sellers. Wagner (2021) uses firm level data from the World Bank Enterprise surveys conducted in 2019 and from the COVID-19 follow-up surveys conducted in 2020 in ten European countries to investigate the link between having a website before the pandemic and firm survival until 2020. The estimated positive effect of web presence is statistically highly significant ceteris paribus after controlling for various firm characteristics that are known to be related to firm survival. Furthermore, the size of this estimated effect can be considered to be large on average. A web site helped firms to survive.

Given this high importance of a web presence for the performance of firms it comes as a surprise that there seems to be no comprehensive evidence on the existence of websites in firms, and on the characteristics of firms with and without activities on the web. While some may argue that this is an irrelevant topic because nowadays every firm has a website of its own, a closer inspection of the available evidence reveals that this not the case. This note contributes to the literature by reporting descriptive evidence on the share of firms with a website in 18 European countries in 2019 based on the World Bank Enterprise Surveys conducted in these countries. Furthermore, differences in various characteristics – firm size, firm age, productivity, innovativeness and international linkages - between firms with and without a website are documented using estimates of so-called website premia that control for the effects of country of origin and sector of economic activity of the firm.

To anticipate the most important result we find that firms which are present in the web are larger, older, more productive, and more often exporters, product innovators, process innovators and (partly) foreign owned firms than firms without a website. The estimated website premia are statistically highly significant ceteris paribus after controlling for country and sector of economic activity. Furthermore, the size of these premia can be considered to be large. The take-home message, therefore, is that good firms tend to have a website.

The rest of the paper is organized as follows. Section 2 introduces the data used and discusses the firm characteristics that are looked at. Section 3 reports results from the econometric investigation. Section 4 concludes.

2. Data and discussion of variables

The firm level data used in this study are taken from the World Bank's Enterprise Surveys in 2019.[1] These surveys were conducted in a large number of countries all over the world. In this study we focus on 18 countries from Europe: Albania, Bulgaria, Croatia, Cyprus, Czech Republic, Estonia, Greece, Hungary, Italy, Latvia, Lithuania, Malta, Poland, Portugal, Romania, Russia, Slovak Republic, and Slovenia.

In the 2019 survey firms were asked in question C22b "At present time, does this establishment have its own website or social media page?" Firms that answered "yes" are classified as firm with a web presence.

Descriptive evidence on the share of firms with a web presence in the total sample and by country is reported inTable I. While the overall share of firms with a website in the sample is 72 percent, figures differ widely between the 18 countries. Web presence is only 30 percent in Lithuania and 56 percent in Bulgaria while some 90 percent of all firms in the sample have a website in the Czech Republic and Slovenia.

[1] The data from the World Bank Enterprise surveys and the questionnaires used are available free of charge after registration from the website https://www.enterprisesurveys.org/portal/login.aspx .

At the bottom of Table I the share of firms with a website is reported by sector of (main) economic activity of the firm. While firms from manufacturing and hotels/restaurants are more often present in the web compared to the overall average figure, and firms from retail/wholesale, construction, and services have a lower rate of web presence, the figures do not differ by order of magnitude.

In the empirical investigation of the difference between firms with and without a website a number of firm characteristics are looked at. The selection of these characteristics is not based on a theoretical model – it is motivated by the consideration that "better" firms might well have a larger chance to have a website because these firms can cover the costs of setting up and maintaining a website, which tend to be fixed costs to a large degree, more easily. The firm characteristics considered and the way they are measured here are listed below.

Firm size: Firm size is measured as the number of permanent, full-time individuals that worked in the establishment at the end of the last complete fiscal year at the time of the regular 2019 enterprise survey (see question I.1).

Firm age: Firm age is measured as follows. In question B.5 of the regular survey in 2019 firms were asked "In what year did this establishment begin operation?". Firm age is the difference between 2019and the founding year.

Productivity: Productivity is measured as labor productivity, defined as the amount of total annual sales for all products and services (recorded in question d2) over the number of permanent, full-time individuals that worked in the establishment at the end of the last complete fiscal year at the time of the regular 2019 enterprise survey (see question I.1). Given that information on value added and on the capital stock used in a firm is missing in the data from the World Bank Enterprise Survey, more elaborate measures of productivity at the firm level like total factor productivity cannot be used.

Innovation: In the regular survey in 2019 firms were asked whether during the last three years this establishment has introduced new of improved products and services (see question H1). Firms that answered in the affirmative are considered as product innovators. Similarly, firms were asked whether during the last three years this establishment introduced any new or improved process, including methods of manufacturing products or offering services; logistics, delivery, or distribution methods for inputs, products or services; or supporting activities for processes (see question H5). Firms that answered in the affirmative are considered as process innovators.

Exports: The firm is considered as an exporter if it reports any direct exports in question D.3 of the regular enterprise survey in 2019.

Foreign ownership: In the regular survey in 2019 firms were asked what percentage of this firm is owned by private foreign individuals, companies or organizations (see question B2). Firms that reported a positive amount here are considered as (partly) foreign owned firms.

Furthermore, firms are divided by broad sectors of activity (manufacturing, retail/wholesale, construction, hotel/restaurant, and services) based on their answer to the question for the establishment's main activity and product, measured by the largest proportion of annual sales (see question D1a1).

Descriptive statistics for all variables are reported for the whole sample used in the empirical investigation in the appendix table.

3. Testing for website premia in firm characteristics

To test for the difference in the firm characteristics listed in section 2 between firms with and without a website, and to document the size of these differences, an empirical approach is

applied that modifies a standard approach used in hundreds of empirical investigations on the differences between exporters and non-exporters that has been introduced by Bernard and Jensen (1995, 1999). Studies of this type use data for firms to compute so-called exporter premia, defined as the ceteris paribus percentage difference of a firm characteristic - e.g. labour productivity - between exporters and non-exporters. These premia are computed from a regression of log labour productivity on the current export status dummy and a set of control variables:

(1) $\ln LP_i = a + ß\ Export_i + c\ Control_i + e_t$

where i is the index of the firm, LP is labour productivity, Export is a dummy variable for current export status (1 if the firm exports, 0 else), Control is a vector of control variables, and e is an error term. The exporter premium, computed from the estimated coefficient ß as 100(exp(ß)-1), shows the average percentage difference between exporters and non-exporters controlling for the characteristics included in the vector Control (see Wagner (2007) for a more complete exposition of this method).

Here we look at differences between firms with and without a website (instead of differences between exporters and non-exporters) and are interested in the existence and size of website premia (instead of exporter premia). Therefore, (1) becomes (2)

(2) $\ln LP_i = a + ß\ Website_i + c\ Control_i + e_{it}$

where i is the index of the firm, LP is labour productivity, Website is a dummy variable for the presence of a website in the firm (1 if the firm has a website, 0 else), Control is a vector of control variables (that consists of dummy variables for countries and sectors of economic activity), and e is an error term. The website premium, computed from the estimated coefficient ß as 100(exp(ß)-1), shows the average percentage difference between firms with and without a website controlling for country of origin of the firm and the broad economic sector it is active in.

Here, ß is computed by OLS (with standard errors that are clustered at the level of the country of origin) for firm characteristics that are measured by continuous variables (firm size, firm age, labour productivity).

For firm characteristics that are measured by dummy variables (product innovator, process innovator, exporter, foreign owned firm) the empirical models are estimated by Probit instead. Therefore, (2) becomes (3)

(3) $Indicator_i = a + ß\ Website_i + c\ Control_i + e_{it}$

and the website premia are computed as the estimated average marginal effects of the website dummy variable.

Results are reported in Table II. The big picture that is shown is crystal clear: Firms which are present in the web are larger, older, more productive, and more often exporters, product innovators, process innovators and (partly) foreign owned firms than firms without a website. The estimated website premia are statistically highly significant ceteris paribus after controlling for country and sector of economic activity. Furthermore, the size of these premia can be considered to be large. However, it is an open question (that is asked the same way when exporter premia are discussed) whether these premia are due to self-selection of better firms into web presence or whether they are the effect of having a website.

On average, firms with a website show a better performance in many dimensions than firms without a website. In this sense we might summarize the findings of this explorative

study as follows: Good firms tend to have a website. Obviously, this does not imply that all firms without a website are not good firms.

4. Concluding remarks

This paper demonstrates that having a website is positively related to firm characteristics that make a better firm. Website premia are large for all dimensions of firms looked at here. Does this study imply that in order to be successful in business, firms should have a website? Or having a website will help the firms to be successful? This is an open question (that is asked the same way when exporter premia are discussed) because we do not know whether these premia are due to self-selection of better firms into web presence, or whether they are the effect of having a website.[2] This cannot be investigated with the data at hand. To answer this important question longitudinal data for firms are needed that cover several years and that include a sufficiently large number of firms that switch the status between having a web site or not over time (in both directions). To the best of my knowledge such data are not available as of today. Let's collect it!

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[2] For example, setting up and maintaining a website is costly and these costs might be easier covered by larger firms, so we tend to see a positive correlation between having a website and firm size. Whether larger firms tend to introduce a website or whether presence in the web fosters firm growth, however, is an open question.

Table I: Share of firms with web presence, 2019

Country / Sector	Number of firms	Share of firms with website (percent)
All	9,855	71.99
Albania	365	59.18
Bulgaria	663	55.96
Croatia	404	84.41
Cyprus	207	75.85
Czech Republic	496	89.92
Estonia	350	76.29
Greece	595	85.89
Hungary	783	74.71
Italy	692	71.97
Latvia	309	69.58
Lithuania	342	30.41
Malta	225	83.11
Poland	692	68.93
Portugal	974	74.64
Romania	794	64.61
Russia	1,157	66.90
Slovak Republic	427	84.78
Slovenia	380	90.53
Manufacturing	5,530	75.86
Retail/Wholesale	2,314	63.87
Construction	678	68.44
Hotel/Restaurant	422	74.64
Services	911	70.58

Source: Own calculation based on World Bank Enterprise Surveys; see text for details.

Table II: Website premia (percent) for firm characteristics

Variable	Premia	Prob-value
Firm size (Number of employees)	98.66	0.000
Firm age (Years)	25.08	0.000
Productivity (total sales / no. of employees)	46.51	0.000
Product innovator (Dummy; 1 = yes)	12.55	0.000
Process innovator (Dummy; 1 = yes)	7.39	0.000
Exporter (Dummy; 1 = yes)	14.92	0.000
Foreign owned firm (Dummy; 1 = yes)	2.53	0.000
Number of observations	9,855	

Source: Own calculations with data from World Bank Enterprise surveys. The website premium shows the average percentage difference between firms with and without a website controlling for country of origin of the firm and the broad economic sector it is active in; for details see text.

Appendix : Descriptive statistics for sample used in estimations

Variable	Mean	Std. Dev.
Web-presence (Dummy; 1 = yes)	0.720	0.449
Firm size (Number of employees)	82.73	297.80
Firm age (Years)	21.81	16.18
Productivity (total sales / no. of employees)	8038385	2.69e+8
Product innovator (Dummy; 1 = yes)	0.273	0.445
Process innovator (Dummy; 1 = yes)	0.169	0.374
Foreign owned firm (Dummy; 1 = yes)	0.098	0.297
Exporter (Dummy; 1 = yes)	0.305	0.461
Number of observations	9,855	

Source: Own calculations with data from World Bank Enterprise surveys; for details see text.